

Fig. 1

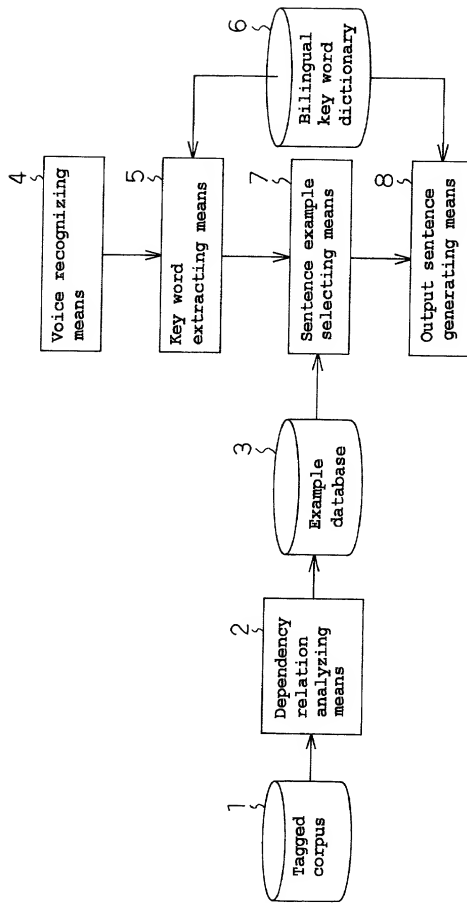


Fig. 2 (a)

Example of bilingual key word dictionary

kohi [コーヒー]	: coffee
onegai [お願い]	: *
miruku [ミルク]	: milk
tsumetai [冷たい]	: cold
ari [あり]	: *

Example of example DB

Dependency relation

(kohi [コーヒー] → onegai [お願い])

(tsumetai [冷たい] → miruku [ミルク]) (miruku [ミルク] → ari [あり]) : Do you have a cold milk ?
...

: Expression pattern

: I'd like to coffee please.

Fig. 2 (b)

Example of tagged corpus

Kohi (common noun) | o (kaku-postpositional particle) | o (prefix) | negai (sahen-noun) | shi (verb) |
masu (auxiliary verb)
[コーヒー (一般名詞) | を (格助詞) | お (接頭詞) | 願い (サ変名詞) | し (動詞) | ます (助動詞)]
Tsumetai (adjective) | miruku (common noun) | ha (kei-postpositional particle) | ari (verb) | masu
(auxiliary verb) | ka (shu-postpositional particle) ...
[冷たい (形容詞) | ミルク (普通名詞) | は (係助詞) | あり (動詞) | ます (助動詞) | か (終助詞)]
...

Fig. 4

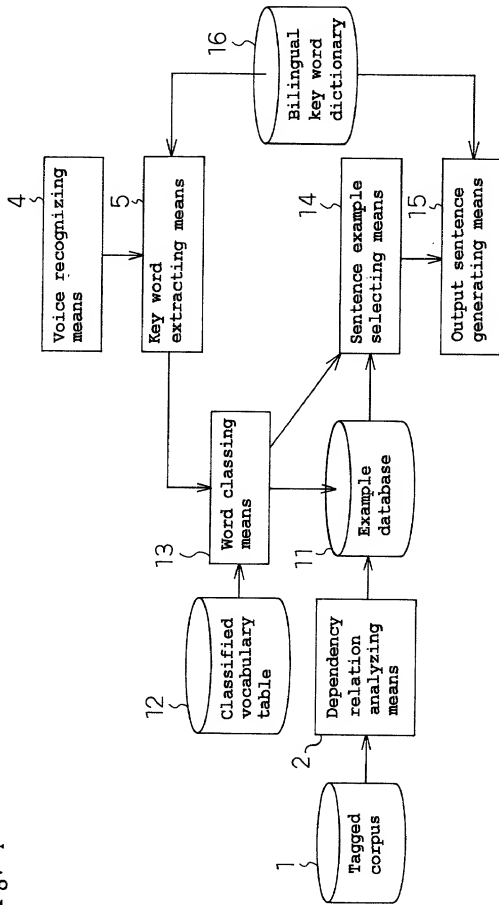


Fig. 5 (a)

Classified vocabulary table

kohi [コーヒー] (common noun [一般名詞])	100
miruku [ミルク] (common noun [一般名詞])	100
koucha [紅茶] (common noun [一般名詞])	100
...	
tsumetai [冷たい] (adjective [形容詞])	200
atsui [熱い] (adjective [形容詞])	200
...	

Fig. 5 (b)

Example of example DB

Key word	Dependency relation	Sentence example
① 100 ② onegai [お願い]	: (①→②)	: I'd like to ② please.
① 200 ② 100 ③ ari [あり]	: (①→②) (②→③)	: Do you have a ① ② ?
...		

Fig. 6

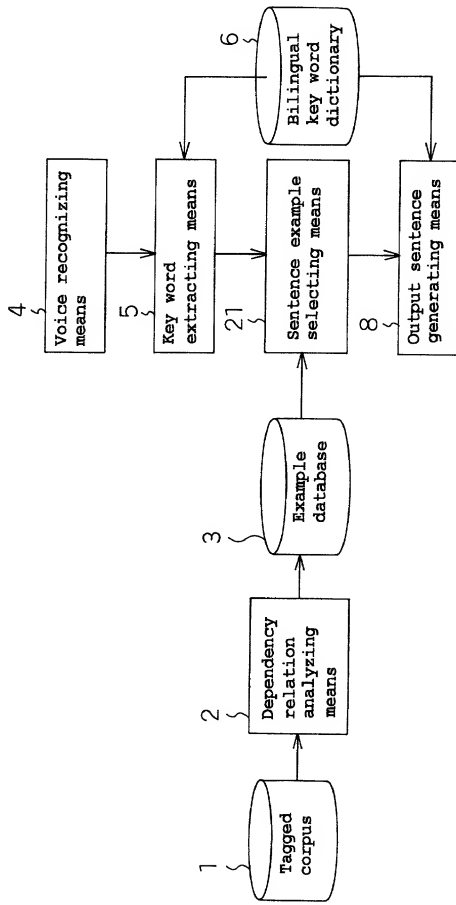


Fig. 7

Input sentence : Atsui miruku ha arimasuka [熱いミルクはありますか]
 Recognition result sentence : Aoi miruku ha arimasuka [青いミルクはありますか]

Example of example DB

Dependency relation	Sentence example
(kohi [コヒー]→onagai [お願い])	Coffee please.
(atsui [熱い]→miruku [ミルク]) (miruku [ミルク]→ari [あり])	Any hot milk ?
...	

Extracted key words : aoi [青い], miruku [ミルク], ari [あり]

Result of dependency relation comparison between the key words and example DB :

(aoi [青い], miruku [ミルク]) ×
 (aoi [青い], ari [あり]) ×
 (miruku [ミルク], ari [あり]) ○

Fig. 8

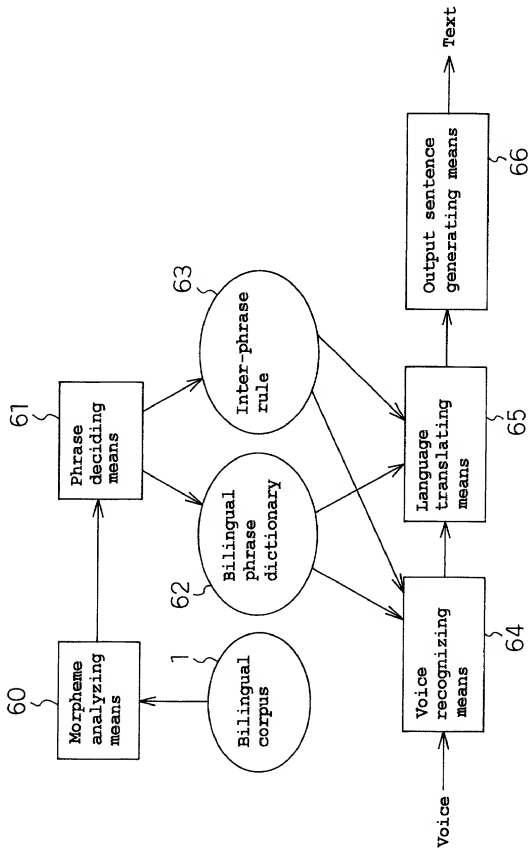


Fig. 9-1 (a)

Heya no yoyaku o onegai shita in desuga
[部屋の予約をお願いしたいんですが]
I'd like to reserve a room.

~70 Bilingual voiced sentence example

Fig. 9-1 (b)

71 Bilingual phrase (A)

heya no yoyaku
[部屋の予約]
(reserve a room)

72 Bilingual phrase (B)

onegai shita in desuga
[お願いしたいんですが]
(I'd like to)

Fig. 9-1 (c)

Japanese	English
X no Y [X の Y]	↔ (YX)
Z shita in desuga [Z したいんですが]	↔ (I'd like to)

62

Bilingual phrase
dictionary

Fig. 9-2 (d)

Japanese	English
(A) o (B) suru [(A)を(B)する]	\leftrightarrow ((B) to (A))

63 Inter-phrase rule

Fig. 9-2 (e)

X (heya [部屋], kaigishitsu [会議室], kuruma [車], ...)
Y (yoyaku [予約], keiyaku [契約], ...)
Z (onégai [お願い], tanomu [たのむ], ...)
...

64

Classified vocabulary
table

Fig. 10 (a)

Example of bilingual key word dictionary

coffee : kofi [コーヒー]
 please : onegai [お願い]
 milk : miruku [ミルク]
 cold : tsumetai [冷たい]
 have : ari [あり]

Example of example DB

Dependency relation	Expression pattern
(coffee→please)	: Kofi o onegai shimasu [コーヒーをお願いします]
(cold→milk) (milk→have)	: Tsumetai miruku ha arimasuka [冷たいミルクはありますか]
...	

Fig. 10 (b)

Example of tagged corpus

I (pronoun) | 'd (auxiliary verb) | like (verb) | to (determiner) | coffee (common noun) |
 please (adverb) |
 ...

Fig. 12

Input sentence : Do you have a hot milk ?
 Recognition result sentence : Do you have a head milk ?

Example of example DB

Dependency relation : Sentence example
 (coffee→please) : Kohi o onegai shimasu [コーヒーをお願いします]
 (hot→milk) (milk→have) : Atsui miruku ha arimasuka [熱いミルクはありますか]
 ...

Extracted key words : (have, head, milk)

Result of dependency relation comparison between the key words and example DB :

(head, milk) ×
 (head, have) ×
 (milk, have) ○

Fig. 13(a)

Example of bilingual key word dictionary

咖啡	: kōhi [コヒー]
要	: kudasai [下さい]
日文	: nihongo [日本語]
菜單	: menyū [メニュー]
有	: ari [あり]

Example of example DB

Dependency relation	: Expression pattern
(咖啡 → 要)	: kōhi o kudasai [コーヒーを下さい].
(日文 → 菜單) (菜單 → 有)	: nihongo no menyū ha arimasuka [日本語のメニューはありますか].

Fig. 13(b)

Example of tagged corpus

要 (动) | 咖啡 (名词) |

Fig. 15

Input sentence : 有日文菜单吗
 Recognition result sentence : 有日没菜单吗

Example of example DB

Dependency relation	: Sentence example
(咖啡 → 要)	: Kohi o kudasai [コーヒーを下さい]
(日文 → 菜单) (菜单 → 有)	: Nihongo no menyu ha arimasuka [日本語のメニューはありますか]
...	

Extracted key words : (有, 日没, 菜单)

Result of dependency relation comparison between the key words and example DB :

(日没, 有) ×
 (日没, 菜单) ×
 (菜单, 有) ○